



2016 Spring Netting (SNII) Summary Report

Graham Lake (WBIC 279300)

Waupaca County

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Introduction and Survey Objectives

In 2016, the Department of Natural Resources conducted a three night fyke netting survey of Graham Lake in order to provide insight and direction for the future fisheries management of this water body. Primary sampling objectives of this survey are to characterize species composition, relative abundance and size structure. The following report is a brief summary of the activities conducted, general status of fish populations and future management options.

Acres: 54 Shoreline Miles: 1.2 Maximum Depth (feet): 54
 Lake Type: Spring Public Access: 1 public access
 Regulations: 15 Panfish may be kept, but only 5 of any one species, all other species follow Statewide Default Regulations.

WISCONSIN DNR CONTACT INFO.

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Survey Information

Site location	Survey Dates	Water Temp. (F)	Target Species	No. of Nets	Gear	Net nights
Graham Lake	4/14/2016 - 4/18/2016	58 - 62	Panfish	3	Fyke Net	9

Survey Method

- Graham Lake was sampled according to spring netting (SNII) protocols as outlined in the statewide lake assessment plan. In this particular survey we were collecting panfish data for the special panfish regulations that have gone into effect for roughly 100 lakes throughout Wisconsin. Graham Lake has a regulation of 15 panfish may be kept but only 5 of any one species.
- Fyke nets were deployed in areas of the lake that appeared suitable for panfish species. All fish captured were identified to species and measured for length. A subsample of fish were weighed and age structures collected for age and growth analysis.
- Fish metrics used to describe fish populations include proportional stock density, catch per effort, length frequency distribution and mean age at length.



Fish Metric Descriptions PSD, CPUE, LFD and Growth

Proportional Stock Density (PSD) is an index used to describe size structure of fish. It is calculated by dividing the number of quality size fish by the number of stock size fish for a given species. PSD values in the 40 to 60 percent range generally describe a balanced fish population.

Catch per unit effort (CPUE) is an index used to measure fish population relative abundance which simply refers to the number of fish captured per unit of distance or time. For netting surveys we typically quantify CPUE by the number and size of fish per net night. CPUE indexes are compared to statewide data by percentiles and within lake trends. For example, if a CPUE is in the 90th percentile, it is higher than 90% of the other CPUEs in the state.

Length frequency distribution (LFD) is a graphical representation of the percentage of fish captured by one inch size intervals. Smaller fish (or younger age classes) may not always be represented in the length frequency due to different habitat usage or sampling gear limitations.

Mean Age at Length is an index used to assess fish growth. Growth structures (otoliths, spines, or scales) are collected from a specified length bin of interest (e.g. 7.0-7.5 inches for bluegill). Mean age is compared to statewide data by percentile with growth characterized by the following benchmarks: slow (<33rd percentile); moderate (33rd to 66th percentile); and fast (>66th percentile).

Size Structure Metrics

Species	Total	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock No	Quality No	PSD	Percentile Rank	Size Rating
BLUEGILL	128	6.6	4.2 - 8.9	3.0 and 6.0	128	93	73%	70th	Moderate
BLACK CRAPPIE	33	8.7	5.4 - 10.8	5.0 and 8.0	33	30	91%	84th	Moderate - High
LARGEMOUTH BASS	11	13.6	5.9 - 19.5	8.0 and 12.0	10	8	80%	61st	Moderate
PUMPKINSEED	25	6.8	5.0 - 8.0	3.0 and 6.0	25	21	84%	90th	High

Abundance Metrics

Species	CPUE Total (no per net night)	Percentile Rank	Overall Abundance Rating
BLUEGILL	14.2	57th	Moderate
BLACK CRAPPIE	3.7	54th	Moderate
LARGEMOUTH BASS	1.2	78th	Moderate - High
PUMPKINSEED	2.8	65th	Moderate

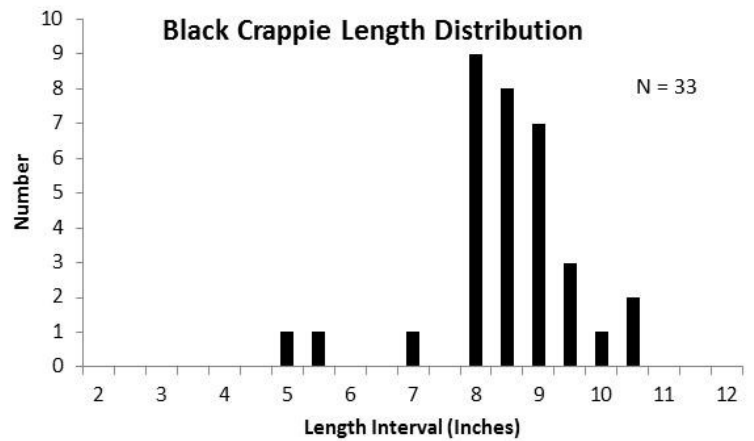
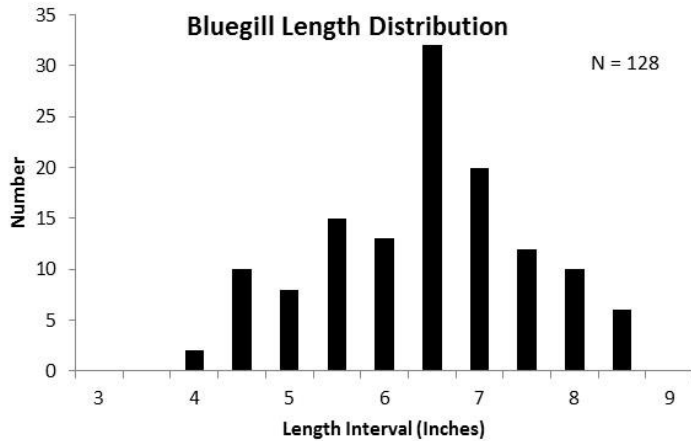


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Growth Metrics						
Species	Total (N)	Length Bin (inches)	Mean Age (years)	Age Range (years)	Percentile Rank	Growth Rating
BLACK CRAPPIE	5	8.0	5	5	9th	Slow

Summary

- A total of 241 fish in 12 species were collected during our surveys. The most frequently encountered and common species were bluegill (128), black crappie (33), pumpkinseed (25) and lake chubsuckers (12).
- All fish captured were native species. The lake chubsucker, listed by the state as a species of special concern, was found at low levels of abundance.
- Other fish species sampled in low abundance included largemouth bass (11), rock bass (11), northern pike (7), yellow perch (6), green sunfish (4), yellow bullhead (2), brown trout (1) and white sucker (1).
- Largemouth bass was the dominant gamefish species captured in the survey. We suspect a good population of largemouth bass to be present, but electrofishing would be a better sampling gear to assess their population.
- Moderate numbers of panfish were sampled.
- Panfish populations were mainly comprised of bluegill, black crappie, pumpkinseed and yellow perch. Bluegill were found in moderate density and showed above average size structure, with 73% of the catch greater than 6.0 inches and 38% greater than 7.0 inches. Black crappie were found at average abundance levels and showed above average size with 91% of our catch greater than 8.0 inches. Black crappie growth was slow when compared to statewide data.

Management Options

This survey was primarily intended to assess panfish populations. Other species were captured but different survey techniques are typically used to better assess their population metrics. Therefore, management recommendations are focused on bluegill and black crappie.

Panfish

- Bluegill size structure and abundance metrics were found at moderate levels. Black crappies were found at low densities, but the fish that were sampled were of quality size.
- Management Objective: Continue to monitor the fishery in the future. High PSD values may be indicative of a poor bluegill year class or poor bluegill recruitment.
- Management Action: A special panfish regulation to help protect the larger spawning stock of bluegill and black crappie was put in place in the spring of 2016. If recruitment is determined to be low, a habitat project such as "Fish Sticks" should be considered to increase recruitment.

Other Management Objectives:

- Currently, Graham Lake is on an 8 year sampling rotation. The DNR sampled Graham Lake for the experimental panfish regulations that were put into place in the spring of 2016. In addition to the special SNI netting survey we also conducted an electrofishing survey in the spring of 2015.
- A large portion of shoreline is undeveloped and the littoral areas of the lake are relatively narrow and confined which makes them particularly susceptible to disturbance. Protection of this littoral is crucial to maintaining panfish populations.